

**What is claimed is:**

A piston assembly comprising:

a hollow cylinder-shaped magnet sleeve having a magnet(s) bonded on external circumferential surface thereof;

5 a hollow cylinder-shaped piston inserted into a hollow space of the magnet sleeve; and

a hollow disc-shaped ring fixed to the piston by a shrink fitting process, and welded to the magnet sleeve which is made of the same material as the ring so as to obtain a configuration of the piston assembly in which the magnet sleeve and the piston are coupled to each other.

10 2. The piston assembly according to claim 1, wherein the ring is inserted between the piston and the magnet sleeve by the shrink fitting process.

3. The piston assembly according to claim 1, wherein the magnet sleeve and the ring are welded by a friction welding method.

15 4. The piston assembly according to claim 1, wherein the magnet sleeve and the ring are welded by an electric resistance welding method.

20 5. The piston assembly according to claim 1, wherein the magnet sleeve and the ring are welded by a plasma welding method.

6. The piston assembly according to claim 1, wherein the magnet sleeve and the ring are welded by a laser welding method.

7. A piston assembly comprising:

5 a hollow cylinder-shaped magnet sleeve having a bent portion inwardly bent at one end of a hollow space thereof, and a magnet bonded on an external circumferential surface thereof;

a hollow cylinder-shaped piston insertedly equipped in the hollow space of the magnet sleeve and having a fixing member-inserting hole formed in a flange part thereof; and

10 a fixing member fusion-fixed to the magnet sleeve by an applied electric current, and functioning as a solvent to fix the bent portion of the magnet sleeve and the flange part of the piston to each other.

8. The piston assembly according to claim 7, wherein the fixing member is made of a material which is possibly fused by the applied electric current.

15 9. The piston assembly according to claim 7, wherein the fixing member is entirely rivet-shaped.

20 10. The piston assembly according to claim 7, wherein the fixing member is coupled using an electric resistance welding method to weld the bent portion of the magnet sleeve and the flange part of the piston.

11. A piston assembly comprising:

a hollow cylinder-shaped magnet sleeve having a bent portion inwardly bent at one end of a hollow space thereof, and a magnet(s) bonded on an external circumferential surface thereof,

5 the bent portion having a fixing member-inserting hole;

a hollow cylinder-shaped piston insertedly equipped in the hollow space of the magnet sleeve and having a fixing member-inserting hole formed in a flange part thereof; and

a fixing member fusion-fixed to the magnet sleeve by an applied electric current, and functioning as a solvent to fix the bent portion of the magnet sleeve and the flange part of the  
10 piston to each other.

12. The piston assembly according to claim 11, wherein the fixing member is made of a material which is possibly fused by the applied electric current.

15 13. The piston assembly according to claim 11, wherein the fixing member is entirely rivet-shaped.

14. The piston assembly according to claim 11, wherein the fixing member is fixed using an electric resistance welding method to weld the bent portion of the magnet sleeve and the  
20 flange part of the piston.